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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FUMIN LU

Appeal 2008-003635
Application 09/778,454
Technology Center 1700

Decided: August 31, 2009

Before, BRADLEY R. GARRIS, ADRIENE LEPIANE HANLON, and
CHARLES F. WARREN, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

DECISION ON APPEAL

Applicant appeals to the Board from the decision of the Primary Examiner finally rejecting claims 1, 3, 5, 7 and 8 in the Office Action mailed December 7, 2004. 35 U.S.C. §§ 6 and 134(a) (2002); 37 C.F.R. § 41.31(a) (2005).

We affirm-in-part the decision of the Primary Examiner.

Claim 1 illustrates Appellant's invention of a spunbond fabric, and is representative of the claims on appeal:

1. A spunbond fabric having excellent softness and strength, made from the spunbond process, including:

(a) extruding filaments consisting of an ultra low viscosity polypropylene polymeric resin having a melt flow rate in grams/10 minutes at 230 degrees Centigrade between 350 MFR and 750 MFR from a spinneret;

(b) drawing said filament through a drawing unit;

(c) generating a filament speed above 4,000 meters per minute; and

(d) creating a fabric consisting [sic] one or more layers of filaments extruded using the same melt flow rate resins between 350 and 750.

The Examiner relies upon the evidence in these references (Ans. 2-3):¹

| | | |
|--------|-----------------|---------------|
| Morini | US 5,476,911 | Dec. 19, 1995 |
| Lu | US 5,688,468 | Nov. 18, 1997 |
| Ofofu | US 6,268,302 B1 | Jul. 31, 2001 |
| Bansal | US 6,548,431 B1 | Apr. 15, 2003 |
| Bailey | WO 96/29460 A1 | Sep. 26, 1996 |

Appellant relies on the following reference (App. Br. 9):

| | | |
|--------------------|--------------|---------------|
| Eaton ² | US 5,173,356 | Dec. 22, 1992 |
|--------------------|--------------|---------------|

Appellant requests review of the following grounds of rejection advanced on appeal by the Examiner (App. Br. 4-5):

claim 1 under 35 U.S.C. § 102(b) or, in the alternative, under 35 U.S.C. § 103(a) over Morini (Ans. 3);

¹ We consider these documents: Appeal Brief filed December 13 2005; Examiner's Answer mailed February 23, 2006; Reply Brief filed April 20, 2006; Supplemental Examiner's Answer mailed July 20, 2007; Supplemental Reply Brief filed September 19, 2007.

² This document has not been made of record.

claim 3 under 35 U.S.C. § 102(e) or, in the alternative, under 35 U.S.C. § 103(a) over Bansal (Ans. 5);

claim 5 under 35 U.S.C. § 103(a) over Lu in view of Ofosu (Ans. 6);

claim 7 under 35 U.S.C. § 102(b) or, in the alternative, under 35 U.S.C. § 103(a) over Bailey (Ans. 4); and

claim 8 under 35 U.S.C. § 103(a) over Bailey (Ans. 7).

Issues

The issues in this appeal are whether Appellant has shown that the evidence in Morini, Bansal, and Bailey do not support the Examiner's findings of prima facie anticipation and conclusions of prima facie obviousness with respect to the claimed spunbond fabric encompassed by claim 1, 3, and 7, respectively, and whether Appellant has shown that the evidence in the combined teachings of Lu and Ofosu and in Bailey do not support the Examiner's conclusions of prima facie obviousness with respect to the claimed spunbond fabric encompassed by claim 5 and 8, respectively.

Claim Interpretation

The plain language of independent claims 1, 3, 5, and 7, couched in product-by-process language, specify a spunbond fabric characterized by the properties imparted thereto by any spunbond process which includes at least the steps of extruding filaments consisting of a specified resin from any spinneret, drawing the filaments through any drawing unit, and forming a fabric of one or more layers therewith. In claims 1, 3, and 5, the process includes the additional step of "generating a filament speed above 4,000 meters per minute." The specified resins consist of: claim 1, "an ultra low viscosity polypropylene polymeric resin having a melt flow rate [(MFR)] in grams/10 minutes at 230 degrees Centigrade between 350 MFR

and 750 MFR;” claim 3, “polyethylene terephthalate resins with IV (intrinsic viscosity) of less than 0.55;” claim 5, “polyamide (PA6 nylon 6) of a R.V. (relative viscosity) below 2.2;” and claim 7, “polypropylene resin having a mass flow rate MFR between 250 and 750 grams/10 minutes at 230 degrees Centigrade.” Dependent claim 8 further limits claim 7 by specifying “a multiple layer fabric consisting of layers of said filaments of the same resins.” *See, e.g., In re Thorpe*, 777 F.2d 695, 697 (Fed. Cir. 1985), and cases cited therein (“even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself”); *In re Bridgeford*, 357 F.2d 679, 680-83 (CCPA 1966); *see also, e.g., In re ICON Health and Fitness, Inc.*, 496 F.3d 1374, 1378-79 (Fed. Cir. 2007); *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004), and cases cited therein; *In re Morris*, 127 F.3d 1048, 1054-55 (Fed. Cir. 1997).

Opinion

We considered the totality of the record in light of Appellant’s arguments with respect to claims 1, 3, 5, 7, and 8 and the grounds of rejection advanced on Appeal. *See, e.g., In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) (““On appeal to the Board, an applicant can overcome a rejection by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness.””) (quoting *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998)); *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992) (“After evidence or argument is submitted by the applicant in response, patentability is determined on the totality of the record, by a preponderance of evidence

with due consideration to persuasiveness of argument.”) (citing, *inter alia*, *In re Spada*, 911 F.2d 705, 707 n.3 (Fed. Cir. 1990)).

Claim 1: § 102(b) or § 103(a) over Morini

We are of the opinion Appellant has shown that the evidence in Morini does not support the Examiner’s finding of prima facie anticipation and conclusion of prima facie obviousness with respect to appealed claim 1.

We find Morini would have disclosed to one of ordinary skill in this art specific crystalline propylene polymers made by certain catalysts having, among other things, an MFR ranging from 600 to 1000 g/10 min., wherein polymers having an MFR ranging from 1000 to 2000 g/10 min. exhibit different properties. Morini, e.g., abstract and col. 3, ll. 18-29. Morini evinces it was known in the prior art to use crystalline propylene polymers having MFR values in the range of 300 to 1500 g/10 min. in melt blown or spun-bonded processes to prepare nonwoven fabrics. Morini col. 1, ll. 11-21. Morini discloses that “at high MFR values (ranging from 1000 to 2000 dl/g), the polymers of the present invention . . . have a consistently narrower MWD[, that is, molecular weight distribution,] . . . [which] is desirable for certain applications, such as the production of fibers with fast spinning processes.” Morini col. 3, ll. 18-27. Morini teaches the disclosed crystalline propylene polymers can be spun into fibers for nonwoven webs by melt-blown processes and by spun-bonded processes, wherein the webs and fabrics produced by the spun-bonded processes “have superior tensile strength and softness over webs and fabrics produced from fibers obtained [sic] polymer produced by thermal degradation process or by known

polymerization processes using known catalysts.” Morini col. 11, l. 62 to col. 12, l. 8.

Appellant submits Morini does not contain evidence describing a fabric within claim 1 because the “fast spinning processes” are not identified as spunbonded processes using the polypropylene polymeric resin and filament speeds of 4,000 meters as claimed. App. Br., e.g., 6-7; Reply Br., e.g., 2-3. Appellant points out that Morini does not define the term “fast” and that filament speeds affect the diameter and thus the denier and softness of the filament. Reply Br., e.g., 2; Supp. Reply Br., e.g., 4-5. The Examiner submits “[a]lthough spinning rate can be used to influence filament properties such as diameter, the spinning rate does not necessarily result in filaments patentably distinct from filaments spun at a lower rate,” and “the filament is the result of many processing variables including extrusion hole size, amount of drawing, and spinning rate.” Supp. Ans. 2-3.

We agree with Appellant that as a matter of fact, Morini does not define the term “fast” with respect to any particular spinning process, and indeed, we find that Morini uses this term with respect to crystalline propylene polymers with MFR values ranging from 1000 to 2000 dl/g. Furthermore, the Examiner’s position with respect to the effect of filament speeds as well as other process factors which can affect the filament is mere speculation with respect to the claimed fabrics and Morini’s disclosure as, indeed, the Examiner does not support the position with evidence found in Morini or elsewhere in the record.

Accordingly, the Examiner has not established a prima facie case of anticipation or of obviousness based on the evidence in Morini as Appellant points out, and thus, we reverse the ground of rejection of claim 1.

Claim 3: § 102(e) or § 103(a) over Bansal

We are of the opinion Appellant has not shown that the evidence in Bansal does not support the Examiner's finding of prima facie anticipation and conclusion of prima facie obviousness with respect to appealed claim 3.

“Appellant concedes that [Bansal] shows a product manufactured as a spunbond with filament speeds above 4,000 meters per minute and with resins having an intrinsic viscosity of less than .55 from a spinneret.” App. Br. 7. Appellant submits Bansal does not anticipate as it teaches away from filaments extruded from a single resin in teaching the use of “two separate polymers to create a single filament,” which teachings also negate a conclusion of obviousness. App. Br. 7-8. In this respect, Appellant points to several disclosures in Bansal, and further argues that these disclosures constitute a teaching away from obviousness as well. Reply Br. 7-8, citing Bansal col. 2, ll. 38-41, col. 3, ll. 7-15, col. 11, ll. 38-59, col. 12, ll. 14-24, claim 12, and claim 13; *see also* Supp. Reply Br. 6-8. The Examiner points out that Bansal discloses the filaments can consist of a single component. Supp. Ans. 3, citing Bansal col. 12, ll. 55-65, and Example 1.

We find Bansal would have disclosed to one of ordinary skill in this art, among other things, that the filaments can consist of a single component, that is, extruded from a single resin, as the Examiner points out: “fibers can be produced as single component fibers, as multiple component fibers, or as some combination thereof.” Bansal col. 12, ll. 60-62. Bansal provides an

illustrative example of a single component fiber in Example 1 which is made from polyethylene terephthalate, that comports with the description of the disclosed invention. Bansal, e.g., col. 2, ll. 12-36, and col. 15, ll. 1-16. Bansal does disclose preferences for multicomponent filaments as Appellant points out. Bansal, e.g., col. 2, ll. 38-41, col. 3, ll. 7-15, col. 11, ll. 38-59, col. 12, ll. 14-24, claim 12, and claim 13.

Appellant's argument that Bansal "teaches away" from the claimed fabric is not an argument that addresses the issue of anticipation. *See, e.g., Celeritas Technologies Ltd. V. Rockwell Int'l Corp.*, 150 F.3d 1354, 1361 (Fed. Cir. 1998) ("[T]he question whether a reference 'teaches away' from the invention is inapplicable to an anticipation analysis."). We further fail to find in Bansal any teaching which leads away from selecting a single resin filament merely on the disclosed preference for certain multicomponent filaments. This is because Bansal's disclosure of multicomponent filaments "does not criticize, discredit, or otherwise discourage" preparing single resin filaments as disclosed therein. *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004).

Accordingly, we have again evaluated all of the evidence of anticipation and of obviousness found in Bansal with Appellant's countervailing evidence of and argument for non-anticipation and nonobviousness, and based thereon we conclude, by a preponderance of the evidence and weight of argument, that the claimed invention encompassed by appealed claim 3 would have been anticipated as a matter of fact under 35 U.S.C. § 102(e), and would have been obvious as a matter of law under 35 U.S.C. § 103(a).

Claim 5: § 103(a) over Lu and Ofosu

We are of the opinion Appellant has shown that the evidence in the combined teachings of Lu and Ofosu does not support the Examiner's conclusion of prima facie obviousness with respect to appealed claim 5.

We find Lu would have evinced that it was conventional in the prior art to use thermoplastic polymers such as, among other things, "nylon," in melt spinning processes to form nonwoven fabrics, wherein "[t]he filaments of the web are . . . joined to each other through conventional techniques." Lu col. 1, ll. 39-57. Ofosu would have disclosed to one of ordinary skill in this art that a spunbonded nonwoven fabric with strength and softness can be prepared with a "polyolefin polymer" that has a "viscosity . . . measured at 180°C. and must be at least 2.5×10^3 dynes.sec/cm²." Ofosu abstract and col. 5, ll. 38-50.

The Examiner contends "[i]t is known in the art that nylon including nylon 6 is conventionally melt spun," and "Ofosu notes that it is believed that small fibers made from lower viscosity polymers enable more polymer to flow at the bond points during bonding, thus ensuring a strong bond, yet the web retains the advantage of softness which smaller fibers provide." Ans. 6, citing Lu col. 1, ll. 39-42, and Ofosu col. 5, ll. 50-60. The Examiner concludes one of ordinary skill in this art would have used "a low viscosity polymer as suggested by Ofosu in the nylon 6 spunbonded fabric of Lu motivated by the desire to ensure a strongly bonded soft nonwoven material." Ans. 6.

Appellant submits that Lu does not teach the use of an ultra-low viscosity polyamide PA6 nylon 6 resin and Ofosu also does not suggest an

ultra-low viscosity polyamide PA6 nylon 6 resin, arguing that the Examiner relied on hindsight to combine Lu and Ofosu. Reply Br. 8-10, citing *inter alia In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992)

We agree with Appellant. Indeed, even in light of the Examiner's position, we do not find in Ofosu any suggestion to extend the teachings therein with respect to the viscosity of a polyolefin polymer to Lu's "nylon" leading to the claimed PA6 nylon 6 resin which, on this record, is only disclosed in Appellant's Specification.

Accordingly, in the absence of a prima facie case of obviousness, we reverse the ground of rejection of claim 5.

Claim 7: § 102(b) or § 103(a) over Bailey

Claim 5: § 103(a) over Bailey

We are of the opinion Appellant has not shown that the evidence in Bailey does not support the Examiner's finding of prima facie anticipation and conclusion of prima facie obviousness with respect to appealed claim 7, and the Examiner's conclusion of prima facie obviousness with respect to appealed claim 8.

With respect to claim 7, Appellant takes the position that Bailey's disclosure of the most preferred MFR range for linear low density polyethylene resin is above 60 grams per 10 minutes at 190°C. App. Br. 9, citing Bailey 11:9-10; *see also* Reply Br. 4-5; Supp. Reply Br. 11-12. Appellant argues that Bailey's product differs from the product claimed in claim 7 because Bailey incorporates Eaton which discloses that the MFR should not exceed 80 g/10 min., thus limiting Bailey's disclosure to an MFR

of 80 g/10 min. as an upper limit of the MFR range. App. Br. 9-10, citing Eaton col. 8, ll. 41-48; *see also* Reply Br. 4-5; Supp. Reply Br. 11-12.

In response to the Examiner's position in the Supplemental Examiner's Answer, Appellant submits:

By incorporating [Eaton] by reference, Bailey also incorporated all of the limitations and elements of that patent, including the limitation that the non-woven fabric described in said patent has an MFR that does not exceed 80 g/10 min. Clearly, [Bailey] is limited by the limitation of [Eaton], which Bailey has incorporated by reference. Whether the Bailey invention's MFR would or would not increase at the temperature claimed by Appellant is irrelevant. The Bailey reference is bound by the limitation stated within [Eaton] where Bailey incorporated those limitations by reference.

Supp. Reply Br. 12.

Appellant maintains this position with respect to claim 8. Appellant takes the further position with respect to claim 8, that based on the novel and unknown properties of the claimed spunbond fabric based on the specified polyethylene resin with the particular MFR in claim 7 on which claim 8 depends, it would not have obvious to one of ordinary skill in the art to choose filaments based on the claimed polyethylene resin invented by Appellant for the reason that such filaments were "unknown but for Applicant's disclosure in the application." Reply Br. 11-12, citing *In re Ochiai*, 71 F.3d 1565, 1570 (Fed. Cir. 1995); *see also* Supp. Reply Br. 12-13.

The difficulty with Appellant's positions is that Appellant has not established that Bailey does not support the Examiner's position. As a matter of fact, we find no disclosure in either Bailey or Eaton supporting Appellant's contention that Eaton's disclosure acts as a limitation on

Bailey's disclosure, and Appellant points to no such disclosure. Indeed, we know of no authority holding that the disclosure of a patent document is limited by the disclosure of any patent document incorporated therein in the absence of express language to that effect, and Appellant cites no such authority. Appellant's view of Bailey's disclosure also does not support their position that the claimed polyethylene resin filaments were unknown in the art prior to the claimed invention, and *Ochiai* does not apply if prior art places one of ordinary skill in the art in possession of the claimed invention. *Cf. Ochiai*, 71 F.3d at 1568-70.

Accordingly, we have again evaluated all of the evidence of anticipation and of obviousness found in Bailey with Appellant's countervailing evidence of and argument for non-anticipation and nonobviousness, and based thereon we conclude, by a preponderance of the evidence and weight of argument, that the claimed invention encompassed by appealed claim 7 would have been anticipated as a matter of fact under 35 U.S.C. § 102(b), and claims 7 and 8 would have been obvious as a matter of law under 35 U.S.C. § 103(a).

Summary

We have affirmed the grounds of rejection of claims 3, 7, and 8, and we have reversed the grounds of rejection of claims 1 and 5.

The Primary Examiner's decision is affirmed-in-part.

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Application 09/778,454

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(v).

AFFIRMED-IN-PART

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MALIN HALEY DIMAGGIO BOWEN & LHOTA, P.A.
1936 S ANDREWS AVENUE
FORT LAUDERDALE, FL 33316